ON THE HYMENOPTEROUS GENUS HARPAGOCRYPTUS AND ITS ALLIES.[1]

By Charles T. Brues.

In the October issue of the Proceedings of the Hawaiian Entomological Society for 1908 Bridwell ('08) described a peculiar genus of Hymenoptera from Queensland, which he named Harpagocryptus and placed in the Family Dryinidæ. Harpagocryptus differs from all other genera of Dryinidæ except *Dryinopsis* Brues ('10)[2] in having the antennæ of the female 12-jointed, but Bridwell was influenced in placing the genus in this family by the habits of the larva which forms a sac on the side of the abdomen of crickets after the fashion of certain well known Dryinids.

About a year later ('10) the present writer described the genus Algoa, based on an anomalous insect from Cape Colony which he was unable to place with certainty in any family. At the time I did not compare it with Bridwell's description of Harpagocryptus, as I did not think the South African insect could be a member of the Dryinidæ. The two are, however, closely related, and I regarded them as synomous until recently, when Mr. Nathan Banks of the Museum of Comparative Zoölogy, gave me a specimen of a subapterous Hymenopteron from Long Island, New York, belonging to the same group. After a careful comparison of the two species before me with Bridwell's description, I have come to the conclusion that three closely related genera are concerned. I find also that I have a male of *Algoa heterodoxa* which is entirely wingless and distinguishable from the female only by the presence of two spines at the apex of the abdomen, and of thirteen antennal joints, while the femora are much more slender than those of the female.

[1]Contribution from the Entomological Laboratory of the Bussey Institution, Harvard University, No. 205.

[2]This genus is similar in many respects to Methoca and apparently still more like Andreus Ashm. (03b), although I know the latter only from the description. Unfortunately the male is unknown and may or may not prove to be of the Thynnid type. Inasmuch as the systematic position of Methoca itself must still be considered as somewhat doubtful, I am unable to form a satisfactory opinion concerning the affinities of Dryinopsis.

Still a fourth member of this group is Olixon Cameron ('87) described from Panama and later redescribed by Kieffer ('11) from Mexico, as Saphobethylus. Turner and Waterston ('17) have shown these two genera to be complete synonyms as the type species of both are identical. Cameron regarded Olixon as an anomalous Braconid, but thought that it showed resemblance to certain Bethylids, particularly on account of its greatly thickened fore legs. Kieffer placed Saphobethylus in the Bethylidæ without question, but Turner and Waterston have referred the insect to the Rhopalosomatidæ.

All four genera are closely related, but are, I think, undoubtedly separable on good characters. They may be distinguished by means of the following key, which is based solely on the females, except in the case of Olixon.

1. Second segment of abdomen much the longest.....2
   Second segment of abdomen only a little longer than third, head transverse, vestigial wings present, reaching to base of abdomen, but without nervure; tarsal claws with a small subapical tooth...**Olixon** Cameron.
2. Tegulæ well developed; anterior wings present, but reduced in size and reaching to the tip of the propodeum; antennæ much longer than the head and thorax together, slender.....3
   Tegulæ and wings absent; antennæ stout, barely as long as the head and thorax.....**Algoa** Brues
3. Mandible with a long apical tooth and with three minute subapical teeth on the inner edge; head seen from above transverse....**Harpagocryptus** Bridwell
   Mandible with a long apical tooth, the inner teeth large and well-developed; head seen from above as long as broad.....**Nealgoa** gen. nov.

Of the three genera, Algoa and Nealgoa are distinguished by a number of characters which are indicated in the generic diagnoses that follow; likewise Algoa and Harpagocryptus are separable by several clear-cut structural differences. Harpa-

gocryptus and Nealgoa are evidently more closely similar, although many characters which might be useful are not given by Bridwell, and were it not for the great geographical separation, I should hesitate to propose a new genus for the North American species.

The characters which appear useful in differentiating the four genera follow.

Olixon Cameron.

Biol. Centr.-Americana, Hymenoptera, vol. 1, p. 412 (1887)
Kieffer. Bull. Soc. Sci. Bruxelles, vol. 35, p. 216 (1911) (*Saphobethylus*)

♂. Head transverse, wider than the thorax. Antennæ a little shorter than the body; first joint of flagellum one-half longer than second, all flagellar joints long, at least four times as long as thick; antennæ inserted below the lower margin of the eyes; malar space with a black carina connecting the eye and mandible; cheeks half as long as the eye. Mandibles curved, pointed and without tooth. Eyes almost attaining the posterior margin of the head. Prothorax a little longer than wide, bulging laterally in front. Anterior wing reaching to the base of the abdomen, without venation or stigma. Propodeum as long as the prothorax, its hind angles acutely toothed. Tarsal claws with a small tooth near tip. Third segment of abdomen a little shorter than the first. External genitalia consisting of a median stylet between a pair of parallel, upturned, filiform projections.

Harpagocryptus Bridwell.

Proc. Hawaiian Entom. Soc., vol. 2, pp. 34 (1908).

♀. Head transverse, wider than the thorax, occiput arcuately emarginate. Antennæ elongate, slender, much longer than the head and thorax together; second and following joints of antennæ subequally elongate, many times as long as thick; first joint shorter than second; pedicel very short, but evidently longer than wide. Mandibles with a long apical tooth and three

minute subapical teeth on the edge. Prothorax large and long, narrowed posteriorly; tegulæ present; fore wings strap-like, reaching to the posterior face of the propodeum; propodeum very long, its superior angles produced into a strong acute tooth on each side.

Algoa Brues.

Journ. New York Entom. Soc., vol. 18, p. 18 (1910)

♀. Head quadrate, not broader than long, occiput faintly emarginate. Antennæ short, barely as long as the head and thorax together; first flagellar joint longer than the second; second and following barely three times as long as thick; pedicel twice as long as thick and more than half as long as the first flagellar joint; antennæ inserted just above the level of the lower margin of the eyes. Malar space with a sharp furrow, shorter than the basal width of the mandible. Mandible with a long apical tooth and three minute subapical teeth on the edge. Eye separated by its own width from the hind margin of the head. Prothorax one-half longer than wide, obliquely narrowed posteriorly. Wings absent, tegulæ obsolete. Propodeum almost as long as the pronotum, much wider behind than in front, its hind angles slightly acute, but not toothed.

♂. Antennæ 13-jointed, longer and more slender than those of the female; pedicel nearly as long as the first flagellar joint; second and following flagellar joints subequal, each three times as long as thick. Ocelli obsolete as in the female. Front femora greatly thickened, the other legs slender, especially the hind ones; all tarsi long and slender, their joints all cylindrical, none flattened nor emarginate at tips. Abdomen armed with two slender, upturned spines at apex.

The male is so similar to the female, except for the additional antennal joint, more slender legs and small spines at the apex of the abdomen that I did not recognize its sex at the time the species was described. It measures 2.5 mm. in length, while the females I have seen range from 4 to 5.2 mm. The antennæ of the male are only slightly lighter basally while in the female the first three joints are honey-yellow.

Nealgoa gen. nov.

♀. Small, 5-6 mm. in length. Head, seen from above as long as broad, produced medially in front, truncate behind, the eyes approaching close to the occipital margin; malar space long, greatly exceeding the basal width of the mandible and equalling the length of the scape, malar furrow wanting; ocelli obsolete. Antennæ 12-jointed, long and slender, slightly attenuate at tips, much longer than the head and thorax together; scape two and one-half times as long as thick; pedicel half as long as the first flagellar joint; all flagellar joints long. Palpi as in Algoa and Harpagocryptus. Pronotum as long as broad, almost as wide as the head, strongly narrowed behind, from just before the middle; mesonotum short, twice as broad as long, tegulæ well developed. Fore wing paddle-shaped, reaching slightly beyond the tip of the propodeum, with a strong costal vein extending almost to the tip, and with two pale, oblique discal veins, evidently the vestiges of the radius and submedius; hind wing absent. Propodeum a little longer and narrower than pronotum, very slightly widened posteriorly, the superior angles prolonged into acute teeth; posterior face concave, almost vertical. First segment of abdomen more or less campanulate, separated from the second, both above and below, by a strong constriction; anterior face separated from the dorsal face by an arcuate carina which gives off a short median ridge behind; spiracle at the lateral margin just behind the carina. Second segment the longest and widest, three times as long as the first, longer than wide and broadest near the tip; apical margin emarginate medially; third to sixth segments subequal, narrowing to the acute tip of the abdomen, each one-third as long as the second, with straight posterior margins. Legs long, the anterior femora thickened, about one third as broad as long, middle and hind femora stout, but neither are noticeably thickened; fourth joint of all tarsi thickened and emarginate at tip, very deeply so on the front pair; claws acute, simple; tibial spurs 1, 2, 2; front and middle tarsi much longer than their tibiæ, posterior ones twice as long.

Type: *N. banksii* sp. nov.

Nealgoa differs from Algoa in its more slender middle legs, longer, unfurrowed malar space, eyes set close to the occipital margin, long slender antennæ, well developed tegulæ and short wings.

Nealgoa banksii sp. nov.

♀. Length 6 mm. Bright fulvo-ferruginous; antennæ infuscated beyond the third joint; middle femora and tibiæ weakly infuscated apically; hind femora strongly so; hind tibiæ fuscous, internally at base and apex pale golden, due to a coating of pale glistening pubescence; pulvilli black. Entire body without distinct sculpture although microscopically punctulate; surface subshining and clothed everywhere with dense, but extremely minute pale hair. Palpi pale yellow, teeth of mandibles black. Wings brownish, costal vein dark brown, discal veins weak, pale brown, margin minutely fringed. Second and third joints of antennal flagellum the longest, subequal, each five times as long as thick; first joint distinctly shorter, twice as long as the pedicel; apical joints of flagellum gradually shorter and more slender, none less than five times as long as thick. Tarsi densely pubescent beneath, each joint with a distinct spine at each outer angle; longer spur of hind tibia half as long as the metatarsus.

Type in the Museum of Comparative Zoölogy, from Sea Cliff, Long Island, New York (Collection N. Banks).

As has been stated above, the four genera referred to are very closely related, but they form an extremely aberrant group and are not readily placed in any family. In 1910, I located Algoa in the Emboleminæ, which is generally considered as a part of the Bethylidæ, and pointed out that it was in many respects similar to the genera with multiarticulate antennæ which form the subfamily Sclerogibbinæ.. These resemblances are mainly in the form of the head, pro- and mesothorax, thickened fore legs and abdomen. Pedinomma, also placed in the Emboleminæ by Ashmead and others (*v.* Brues '22) shows many resemblances and is likewise widely distributed, although differing in the number of antennal joints. Recently Turner and Waterston ('17) have referred Olixon to the Rhopalosomatidæ

on the basis of the similarity of the genitalia of the male and the number of antennal joints in the two sexes which is the same as that prevailing in Rhopalosoma and most aculeate Hymenoptera. There is also a curious similarity in the habits of Rhopalosoma and Harpagocryptus. Hood ('13) has shown that the larva of the former lives as an external parasite on the jumping tree cricket, Orocharis, while Bridwell's Harpagocryptus was reared from an Australian cricket of the family Trigonidiidæ on which the larva forms a sac like that of certain Dryinidæ.[1] This habit would, however, not give any reason to associate Harpagocryptus with Rhopalosoma rather than with the Drynidæ.

I am unable to reconcile the differences between Rhopalosoma and the genera here discussed sufficiently to assign them to the same family. The head in both sexes of Rhopalosoma is thin and strongly transverse, the eyes and ocelli very large and the front is not produced anteriorly. The thorax has the pronotum very short and collar-like and absolutely different from that of Algoa, *et al.* The propodeum is elongate-oval, not truncate nor sharply declivous behind; the abdomen has an extremely long petiole; the femora are only slightly thickened and the middle coxæ are approximate (widely separated by the mesosternum in Algoa). Such divergence, particularly in the form of the prothorax, head and propodeum is certainly of great importance, although the reduction of the eyes, mesothorax and scutellum is usually encountered in wingless or subapterous Hymenoptera.

Ampulicimorpha Ashmead, referred by him to the Embolemin æ does not show any great similarity to Algoa except in the general form of the head and thorax and the external male genitalia which resemble those of Olixon as described by Kieffer. On the other hand, the peculiar genus Sierolomorpha (placed by Ashmead ('03) in the family Cosilidæ), resembles Algoa quite closely in abdominal structure, in the general form of the thorax and head, thickened legs and antennæ (♂ 13-jointed, ♀ 12 jointed)[1].

[1]This insect is evidently the undescribed Embolemid mentioned by Perkins '05 (footnote, p. 27) as having been reared from "small cricketes of the genus Trogonidium or allied forms."

[1]Ashmead knew only the male, but several years later (Brues '05) the present writer found the female of this interesting insect).

The male of Algoa differs strikingly from all of the foregoing by the bispinose armature at the apex of the abdomen, which recalls that of the otherwise very different Mutillidæ. The male of Sierolomorpha has no spines that project beyond the tip of the abdomen. In Algoa I cannot find the "stylet" described by Kieffer for Olixon, which is evidently retracted in my specimen of Algoa, although the male of Ampulicimorpha bears a pair of spatulate claspers that project beyond the tip of the abdomen on each side of a median stylet.

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A BIBLIOGRAPHICAL NOTICE ON THE REDUVIID GENUS TRIATOMA (HEMIP.) [1]

By Roland F. Hussey.

The genus *Triatoma* has received much attention during recent years, both from the entomological and from the medical viewpoints. Chagas' discovery that these insects may serve as intermediate hosts in the transmission of trypanosomal diseases of the American tropics awakened an active interest in this genus among Brazilian and Argentine workers, and as a result numerous papers have been published on the biology and taxonomy of the group. Among these are two very important contributions—summaries, in fact, of our knowledge of the genus *Triatoma* —which may be called to the attention of entomologists in general.

The first of these is the "Revisão do genero Triatoma Lap.," by Dr. Arthur Neiva, of Rio de Janeiro. During the years 1910 to 1914, Dr. Neiva published a series of thirteen papers on this genus, some dealing with the biology of the Brazilian species, some with the medical aspects of their ecology, and some with their taxonomy. After studying the collections of the principal museums in Europe and in North and South America, he des-

[1]Contributions from the Entomological Laboratories of the Bussey Institution, Harvard University, No. 204.